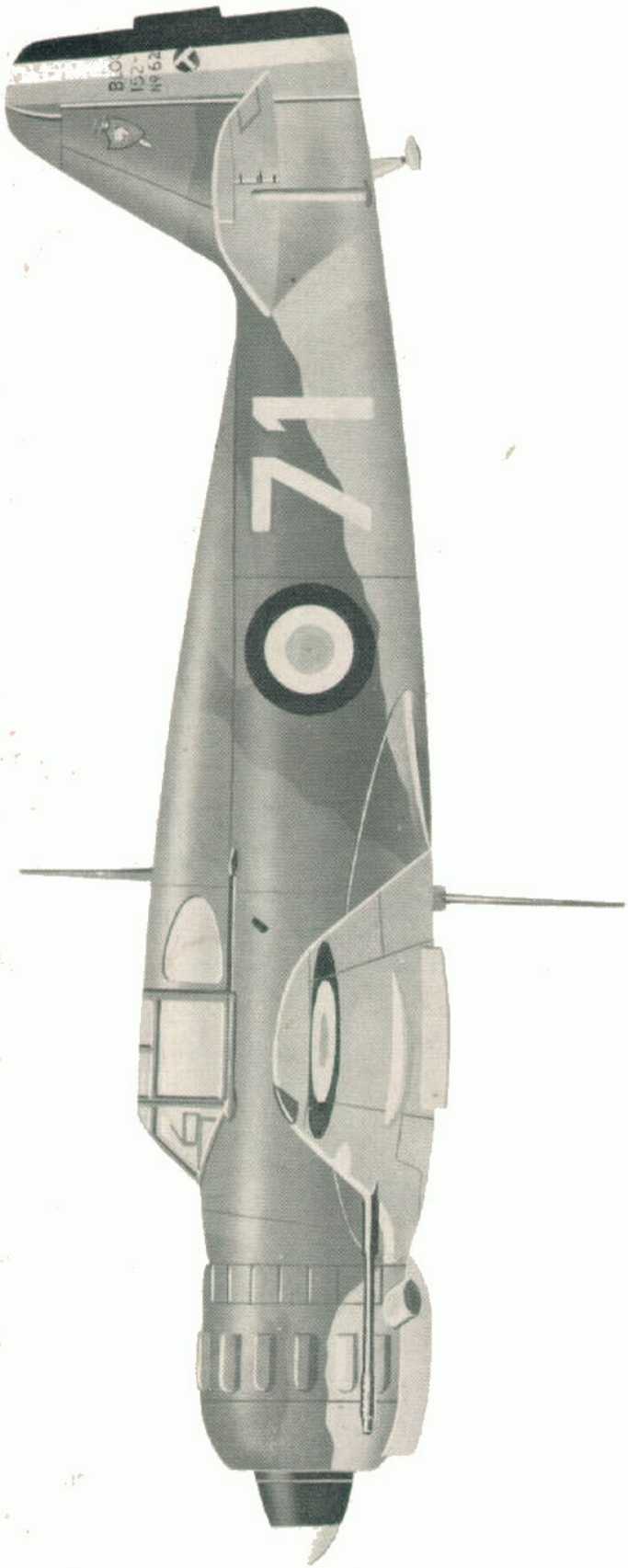
PROFILE
PUBLICATIONS

The M.Bloch 151 & 152



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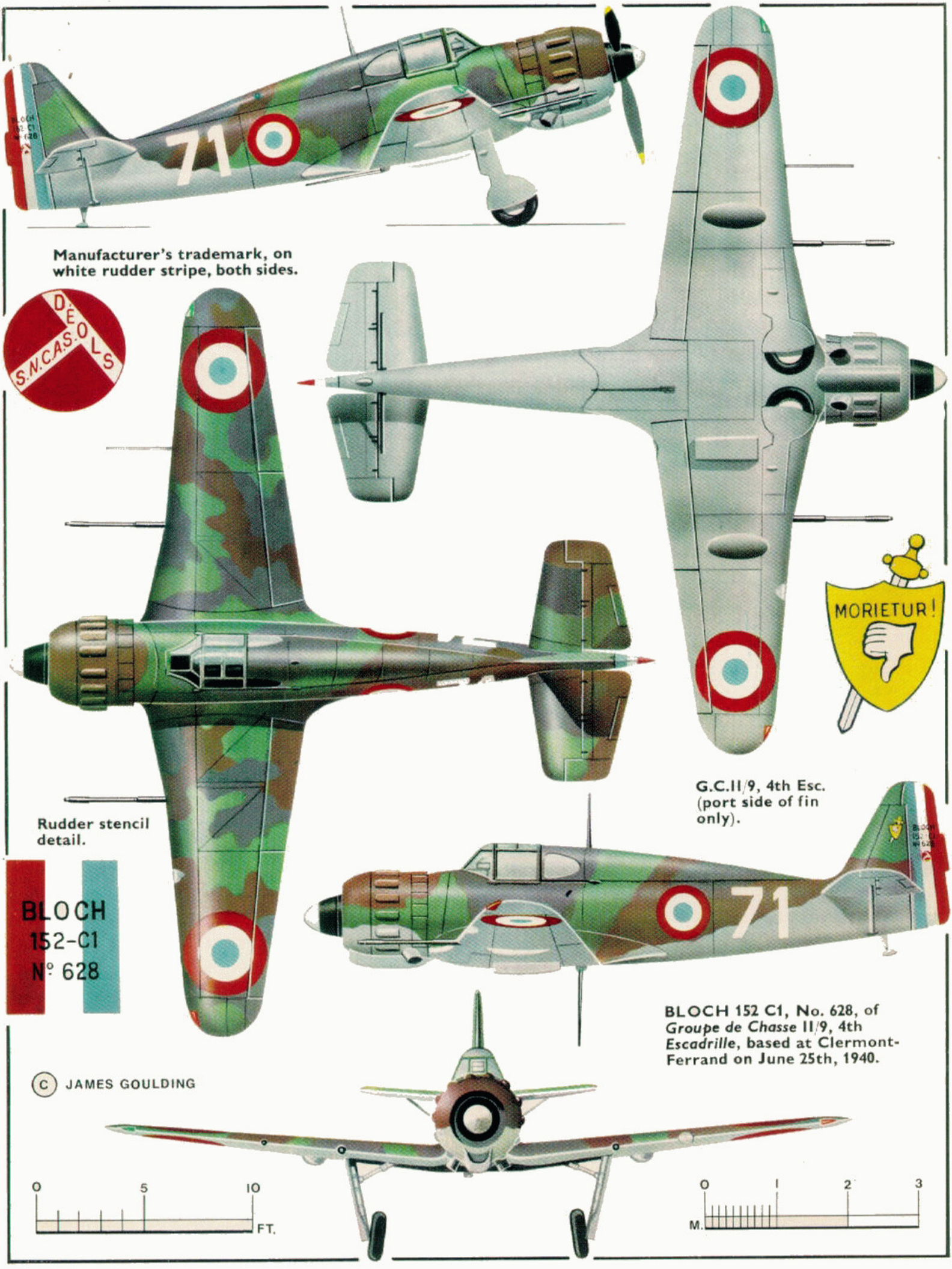
71
Manufacturer's trademark, on white rudder stripe, both sides.
DÉ
S.N.C.A.S.O
LS
MORIETUR!
G.C.II/9, 4th Esc. (port side of fin only).
Rudder stencil detail.
BLOCH
152-C1
N° 628
71
BLOCH 152 C1, No. 628, of Groupe de Chasse II/9, 4th Escadrille, based at Clermont-Ferrand on June 25th, 1940.
© JAMES GOULDING
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The M.Bloch 151 & 152

by Michel Cristesco

A line-up of Bloch 152's of 2nd Escadrille, G.C.I/1 with the Armée de l'Air de l'Armistice *at Lyon-Bron in 1942; note insignia on fin.* (Photo: E.C.A.)

During the May-June, 1940 campaign, except for inadequate numbers of Dewoitine 520's (*Profile* 135), no single-seat French fighter was, technically speaking, capable of opposing on equal terms the German Messerschmitt Bf 109E (*Profile* 40) with which all operational *Jagdgeschwader* were equipped at that time.

Considering only their fighting ability and general performance, the Caudron 714 and the M. Bloch 151 were roughly equivalent to the Bf 109B or C, whereas the Morane-Saulnier 406 (*Profile* 147), the American-built Curtiss H75 (*Profile* 80) and the M. Bloch 152 could at best be compared with the Bf 109D. Unfortunately, there were no Bf 109B, C or D's left in *Luftwaffe* first line service at the time of the *Blitzkrieg*!

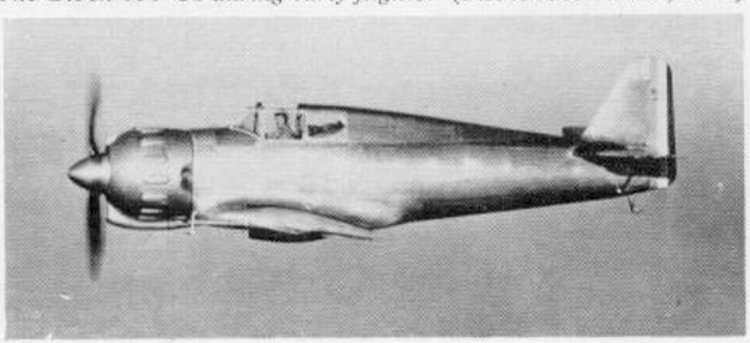
Though they were not so inferior in numbers as is so often stated, the French fighter pilots were not able in spite of their gallantry to overcome the technical and often tactical inferiority of their equipment. The Bloch 152, the most widely used French machine during the last weeks before the armistice, was about to be replaced, too late, by more modern aircraft. Compared with its French contemporaries, the Bloch 152 was the least successful in combat and the one that suffered the heaviest losses. Its two main faults were its inadequate range and poor manoeuvrability at altitude, where its powerful armament frequently became useless due to insufficient heating, thus depriving many pilots of their "kills". The Bloch 152 was, nevertheless, a very sturdy machine and capable of taking much more punishment than its stablemates. It was also considered to be a very steady gun platform and could quickly attain high speeds in a dive.

The Bloch 150 after modification. (Photo: Sud-Aviation)

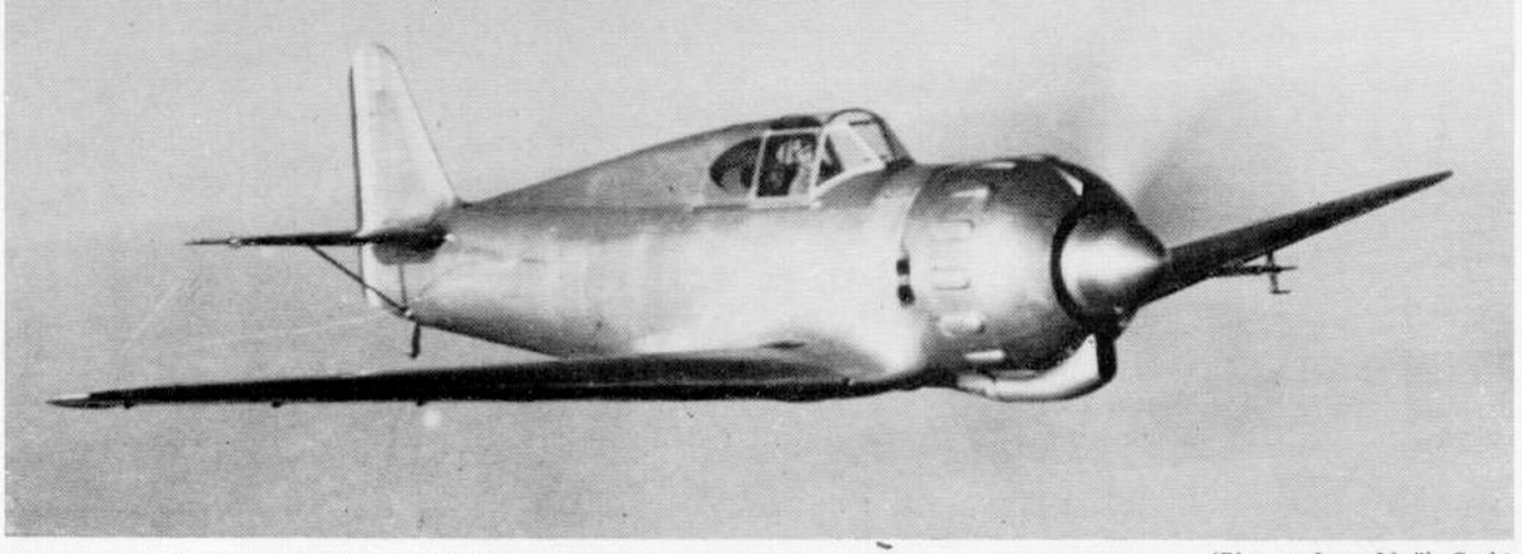
THE BLOCH PEDIGREE

The first of the line, the Bloch 150 C1 stemmed, like the Morane Saulnier 405 and 406, from a French Air Ministry Specification, which was first issued on 13th July, 1934 and reached its final form on 16th November, 1935. Designed by a team headed by M. Roussel at the Courbevoie plant of *Avions* Marcel Bloch, the Bloch 150-01 was an all-metal stressed skin monoplane powered by a Gnôme-Rhône 14 Kfs air cooled radial engine rated at 930 h.p. at 4,350 m. (14,265 ft.) and was armed with two Hispano-Suiza HS404 cannon mounted in the wing outside the airscrew arc. The first take-off of the prototype, construction of which had begun in September 1935, was attempted on 17th July, 1936, but the machine failed to leave the ground. The design was subsequently shelved but early in 1937 development was resumed. A strengthened wing of greater area (15·4 m²) was fitted; the original Bloch undercarriage was replaced by a taller Messier unit and in this form the machine flew for the first time on 29th September.

Subsequent modifications included the installation of a direct-drive Gnôme-Rhône 14N07 engine and, under the new designation M. Bloch 150-01M (M for Modified), the aircraft reached 434 km/h. (269 m.p.h.) during official test at the CEMA (*Centre d'Essais du Materiel Aerien*), Villacoublay, in



The Bloch 151 C1 during early flights. (Photo: Jean Noël, Sud.)



Another view of the Bloch 151 C1 during early flights. (Photo: Jean Noël, Sud.)

Bloch 152 No. 320 during manufacturers' trials; note absence of armour behind pilot's seat. (Photo: via M. Cristesco)

December 1937. After returning to Courbevoie, the machine's wing span was increased from 10·02 to 10·03 m., the twin wing-mounted radiators were replaced by a single radiator between the wheel wells, and a geared Gnôme-Rhône 14N01 engine of 940 h.p. was fitted. Further trials took place at CEMA in March 1938 and these resulted in a slight increase of the rudder area since a Gnôme-Rhône 14N21 engine of 1,030 h.p. was to power the machine.

FIRST ORDERS

Despite its mediocre performance, the M. Bloch 150 design profited early in 1938 from a series of favourable circumstances which finally led to the basic airframe being retained together with the M.S. 406, for the urgent re-equipment of the French Air Force fighter units. Following the adoption of "Plan V" on 15th March 1938, the French Air Ministry was faced with the seemingly insoluble problem of delivering 940 modern single-seat fighters to the Air Force within a year. Even the most optimistic estimates could not exceed 285 M.S. 406's. Though its development was not yet complete and because of its radial engine, the Bloch 150 was included in the production scheme.

A prototype order No. 308/8 called early in April 1938, for three improved aircraft to be constructed from the basic airframe by the Courbevoie plant. More powerful engines were to be used such as derivatives of the Gnôme-Rhône 14N series, the Hispano-Suiza 14AA, the projected Gnôme-Rhône 14P (with which a max. speed of 580 km/h. [360 m.p.h.] had been calculated) or the American-built Pratt and Whitney "Twin Wasp."

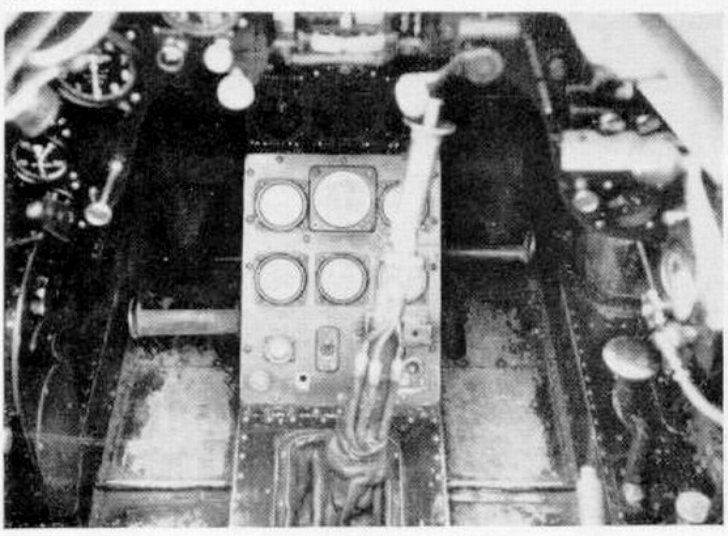
Closely following the prototype order, another contract (No. 385/8) was signed on the 7th April 1938 for 25 pre-production aircraft, and a further 450 machines were to be confirmed depending upon the development programme being satisfactory. Assuming this, the scheduled delivery rate was for 300 Bloch fighters to be in French Air Force hands by the 1st April, 1939 (reduced to 206 in September 1938), the remainder to be completed by the following November.

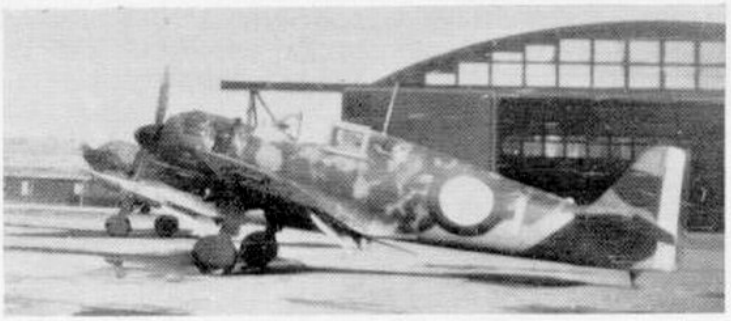
In fact the first phase of "Plan V" was far from being reached. By April 1939, the target date, the F.A.F. had only taken delivery of 147 modern single-seat fighters, i.e., 104 M.S. 405's and 406's, 42 American-built Curtiss H75A1's and one Bloch 151.

SNCASO (*Société Nationale de Constructions Aéronautiques du Sud-Ouest*), which was formed on 16th November, 1936, was entrusted with the mass-production of the Bloch 150 and its derivatives.

As the structure of the Bloch 150 prototype was unsuitable for rapid mass production, the airframe was re-designed completely in order to fulfil the

(Left) *Cockpit of a Bloch 152.* (Photo: E.C.A.). (Right) *Production of Bloch 152's at Chateauroux-Deols during the spring of 1940.* (Photo: Jean Noël)





Bloch 152 of 3rd Escadrille, G.C.II/8.
(Photo: C.A.C.)

Mishap to a Bloch 152 tested with a four-blade propeller.
(Photo: Jean Cuny)

requirements of the contract.

THE BLOCH 151 PROTOTYPE

In accordance with the simplified manufacturing processes, a new prototype called the M. Bloch 151 was hastily built at Courbevoie. This machine was in fact the first pre-production machine and so never carried on its fin the prototype numbering, 01. The Bloch 151's main characteristics were its modified wing profile, a smaller chord wing of 10·54 m. (34 ft. 6¾ ins.) span and the wing area reduced to 15 m2 (49·2 sq. ft.). The engine was a geared Gnôme-Rhône 14N11 of 870 h.p. driving a Ratier airscrew enclosed in an attractive close-fitting cowling offering a remarkably small frontal area to the cooling air. The unique oil radiator had been slung under the port wing and a skid replaced the tail wheel of the Bloch 150. Armament consisted of four 7·5 mm. MAC 1934 m.g. with 300 r.p.g., located in the wing.

The SNCASO test pilot, R. Blanc, flew the Bloch 151 for its first flight on the 18th August 1938 at Villacoublay. Several modifications were made to the machine, including a larger tailplane, a lengthened engine mounting and a new Gnôme-Rhône airscrew.

Two major problems somewhat delayed the development of the Bloch 151 and, consequently, the completion of the pre-series batch. In January 1939 engine overheating necessitated the evaluation of three different oil coolers, the most efficient one being a Ferlay, and this was adopted for the production machines. It was also noted during high-speed and dive tests that despite the evaluation of various types of tailplane and flaps, the aircraft was poorly balanced around its pitching axis.

Finally, despite all efforts to improve the Bloch 151 prototype, the performance remained rather disappointing. The estimated 480 km/h. was never attained, either by the prototype or by the production Bloch 151.

Three further pre-production machines were left at SNCASO's disposal to be used as test-beds.

THE BLOCH 152 PROTOTYPE

The first true aircraft built in accordance with the prototype order No. 308/8 was the Bloch 152-01, completed at Courbevoie in October 1938 using the airframe numbered 433. Essentially it differed from the Bloch 151 in that it had the more powerful Gnôme-Rhône 14N21 engine, rated at 1,030 h.p. with which a max. speed of 520 km/h. (323 m.p.h.) was expected at an altitude of 5,000 m. (16,400 ft.). The proposed armament was to be either four 7·5 mm. m.g. with 500 r.p.g. (instead of 300 on the Bloch 151) or two 20 mm. HS404 cannon with 60 r.p.g. and two 7·5 mm. m.g., the second variation practically always being mounted on the Bloch 152.

The maiden flight took place at Villacoublay on the 15th December, 1938 with R. Blanc at the controls. In January 1939, a similar engine to the one intended for the first production Bloch 152's, i.e. a 1,000 h.p. Gnôme-Rhône 14N25, was fitted instead of the original 14N21.

As with the Bloch 151, the same cooling difficulties were the cause of engine overheating not allowing the machine to be flown at full throttle, thus limiting the top speed to about 470 km/h. (292 m.p.h.). During 1939 various airscrews and engine cowlings were tested in flight in an attempt to solve this problem. The cowlings tested differed from one another, being of different shapes at their forward extremity, the diameter of which was between ·750 m. and 1,000 m.

In order not to delay the delivery of the first

Details of pilot's equipment, instruments and gunsight.
(Photo: C.A.C.)

production Bloch 152's too much, the larger 1,000 m. cowling was adopted and the resulting drag reduced the performance well below the minimum contractual requirements.

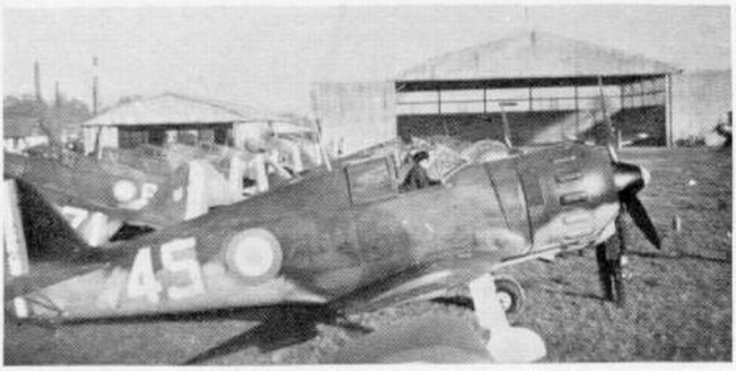
After intensive test flights, the Bloch 152-01 was brought up to the series standard and redesignated the Bloch 152 No. 433. It was finally taken on charge by the French Air Force on the 15th May, 1940.

THE BLOCH 153-01 PROTOTYPE

The second machine of the prototype order No. 308/8, the Bloch 153 No. 01, was assembled late in October 1938 using the 434 airframe and an American-built Pratt & Whitney R1830 SC3-G "Twin Wasp" engine driving a Hamilton airscrew. Following its maiden flight at Villacoublay on 8th April, 1939, the Bloch 153-01 was evaluated by CEMA and was the subject of many modifications similar to those which had already been carried out on the Bloch 151 and 152 prototypes.

It has been reported that the Bloch 153 prototype was destroyed in May 1940 when its pilot failed to avoid a bomb crater while landing at Villacoublay. In fact the machine retreated south after being accepted by the Air Force on 28th May 1940 as Bloch 153 No. 434, and was later flown again by the Vichy Air Force.

The third and last prototype of the 308/8 contract was to have been called the Bloch 154, constructed on the No. 435 airframe. It never reached completion as its intended engine, a Wright R1820 Cyclone, did not arrive on time.



Bloch 152's of G.C.II/9 at Clermont Ferrand late in June, 1940. Above the fuselage of No. 634 (foreground) can be seen the tail of Capitaine Guisard's aircraft, with the personal marking illustrated (below). (Photos: Dr. Riviere)

PRE-WAR DELIVERIES

Production of the Bloch fighter was shared among the various SNCASO establishments and the order—No. 385/8—was eventually confirmed for a total of 432 aircraft comprising:

144 Bloch 151's (Gnôme-Rhône 14N35's)
144 Bloch 152's (Gnôme-Rhône 14N25's)
144 Bloch 152's (Gnôme-Rhône 14N49's).

The military registration Y-488 to Y-919 was to be painted under the wings in accordance with the serial number sequence from 1 to 432. The serial was taken out of the same list for both the Bloch 151's and 152's. For instance, the following serials applied to Bloch 151's: 2, 4 to 8, 12 to 15, 21 to 90 (except for Nos. 41 and 43 which were Bloch 152's), 92 to 94, 96 and every even number up to 112, 116, 118, 346 and every even number up to 432 (except for Bloch 152 Nos. 352 and 412).

Apart from the few machines built at Courbevoie between December 1939 and January 1940, all the machines carrying an even number were assembled at Châteauroux, the others at Bordeaux-Mérignac. From January 1940 all machines were delivered at Châteauroux. A few days after the 385/8 order was confirmed another provisional contract was placed for a futher 100 Bloch 152's to be built at Châteauroux.

The first pre-production Bloch 151 eventually flew in December 1938 and not until 7th March was a similar machine—No. 4—taken on charge by the Air Force. By mid-May only 22 Bloch 151's and 152's had left the assembly lines and ten of these were in Air Force hands. Evaluation of these aircraft showed them to be unsuitable for squadron use owing to a tailplane defect so plans were made to store the first 157 machines pending modification, and to have SNCASO modify subsequent machines before delivery to CRAS (*Centre de Reception des Avions de Serie*). Furthermore the Bloch 151 was relegated to training duties. Only one squadron received Bloch 152's before W.W.2 began and that was G.C. I/1 of the 1st *Escadre de Chasse* at Etampes-Montdesir; it took delivery of its first machine in late July 1939.

THE PHONEY WAR

When war was declared, 249 Bloch 151's and 152's had come off the assembly lines. Of these, 123 had been accepted by CRAS and 50 Bloch 151's, most of these with no airscrew, and 66 Bloch 152's had been taken on charge. G.C. I/1 was mobilised on 27th August with its previous equipment of Dewoitine 510's, as their Bloch 152's could not be flown operationally.

The first modified Bloch 152's were made available to the *Armée de l'Air* from 26th September and three of these were allocated to G.C. I/1 by the 3rd October. At that time 162 Bloch 152's had been delivered; 47 with no airscrew, 40 with the four-blade fixed-pitch Chauvière airscrew, 40 with the 2590M Gnôme-Rhône, and 35 with the definitive Chauvière type 371 airscrew. By 6th November G.C. I/1 had 26 of these

aircraft, and G.C. II/1 had a similar batch at Buc by the 15th November. It appeared that the machine was not yet satisfactory, as some pilots of G.C. I/1 nicknamed it the "*avion a quatre mains**". In a deep dive the aircraft gradually tended to adopt an almost vertical position; consequently the pilot had to hold the stick firmly in his right hand and with the left had to control the throttle lever adjusting the airscrew pitch in order not to exceed the maximum allowed r.p.m., at the same time operating the wheel of the tailplane trim tab!

As regards the Bloch 151, 28 of these, nearly all fitted with a wooden airscrew, were delivered to the C.I.C.'s (*Centres d'Instruction de Chasse*), similar to the British O.T.U., which were being constituted at Chartres and Etampes. Some 50 Bloch 151's were to be provisionally allocated to the *Escadrilles Régionales de Chasse* for training purposes before these units could convert to the Bloch 152.

In late October, 1939, the first five Bloch 151's were delivered to ERC 1/561 at Villacoublay and gradually further aircraft were delivered during the following three months to:—

ERC 1/561 and 2/561 at Rouen-Boos, which formed on the 14th October, 1939, GARC 1/561 (*Groupe Aérien Régional de Chasse*); and from 1st January, 1940, G.C. II/10.

ERC 1/562 at Lyons-Bron, which on 1st October 1939 became GARC 562 and, on 11th January 1940, G.C. III/9.

ERC 3/561 and 4/561 at Le Havre-Octeville which formed on the 19th October 1939, GARC 11/561; and from 1st January 1940, G.C. III/10.

G.C. 1/8 was mobilised during the winter of 1939-1940 at Marignane with 16 Dewoitine 501's and 8 Dewoitine 510's and had moved from Hyeres to Dijon-Longvic. It was re-equipped with Bloch 152's, the first four of these reaching the unit by the end of December 1939. After a short stay at Cherbourg and Langvéoc-Poulmic, G.C. I/8 moved on the 31st March to the front area and was based at Velaine-en-Haye airstrip.

During the same period the Naval Co-operation unit G.C. II/8, flying twin-engined Potez 631's (*Profile* 195) left its peacetime base at Marignane and joined the *Aéronavale Escadrilles* AC1 and AC2 at Calais-Marck to which it handed its Potez's after having converted to a single engine unit with Bloch 152's.

The cooling difficulties of the 14N25 and 14N35-powered Blochs were partly remedied thanks to a modified air intake which was gradually introduced to almost all serving machines.

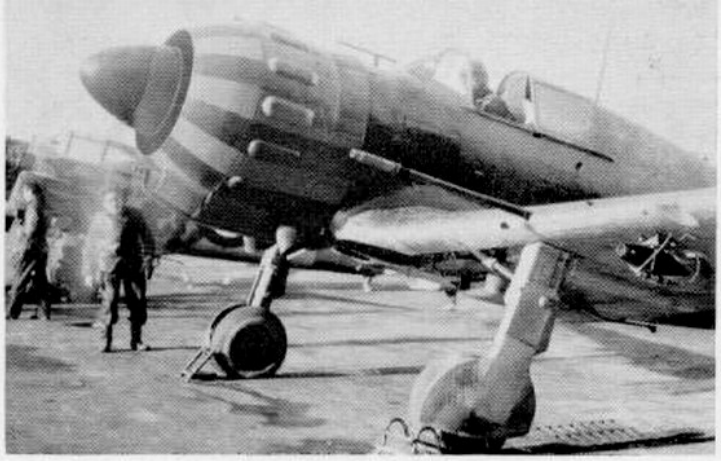
BLOCH 152 FINAL DEVELOPMENT

By the middle of September 1939, a supplementary war order had been passed for 500 more Bloch 152's. This was in fact to be a first step towards an unlimited order of 1,725 Bloch 152's or derivatives.

This contract was superseded on 21st November by a letter of order calling for 690 machines, shortly afterwards confirmed by Contract No. 2405/9. In the meantime, the original order of 144 Bloch 151's was broken down as follows:—

90 for the *Armée de l'Air* training units
25 for the French *Aéronavale*
25 for Greece
4 to be left at SNCASO's disposal as experimental machines.

The last four aircraft were replaced (order No. 2453/9) by four more Bloch 152's serialled 497-500.



Fine close-up of a Vichy Bloch 152; note gun details. (Photo: E.C.A.)

By 10th January 1940, the French Air Force had taken delivery of 138 Bloch 151's, 62 of which were not in flying condition and 274 Bloch 152's, 170 of which, fitted with the 14N25 engine, had no airscrew or a provisional one. From early in October 82 machines had been accepted, serials starting from No. 301, powered by the more powerful Gnôme-Rhône 14N49 driving a Chauvière type 371 airscrew. The engine cowling was of the definitive ·850 mm. diameter; the exhaust collector, copied from that of the Curtiss H75, embodied two outlet pipes at the bottom of the cowling and the oil radiator's cooling area increased to 8 m^2.

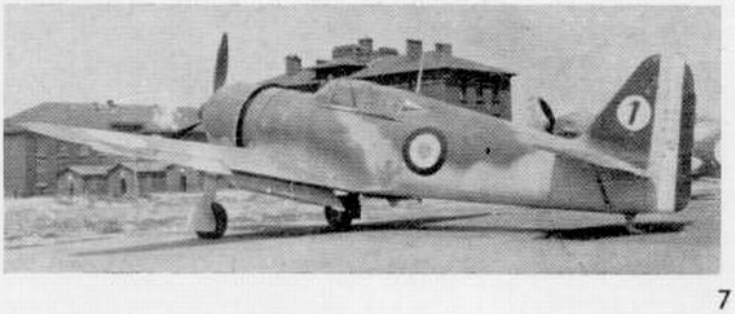
Early in 1940 it was decided to stop further assembly work on some 60 Bloch 152's (serial numbers 436 to 496) which had not reached 50% completion. From No. 501, the 14N49-powered Bloch 152's were to be fitted with an amended tailplane and the French Air Staff specified that only these machines were "*bon de guerre*", i.e. fully operational on delivery, as they incorporated all the required modifications. The rudder trim tab being rendered adjustable in flight as well as on the ground was a subsequent amendment from No. 641 onwards.

A new derivative, the M. Bloch 155, was shortly to supersede the Bloch 152 on the Châteauroux assembly line and all orders dealing with the Bloch series were revised accordingly.

The initial pre-war orders were cut to 294 aircraft, 140 Bloch 151's and 154 Bloch 152's. Whereas contract No. 2453/9 remained valid for four Bloch 152's, contract No. 2405/9 was amended to a total of 330 Bloch 152's and 403 Bloch 155's. The final breakdown of Bloch 152's and 155's was:—

200 B1.152's with 14N25 engines. Serials between 9-300.
88 B1.152's with 14N49 engines. Serials between 301-431.
4 B1.152's with 14N49 engines. Serials 497-500.
196 B1.152's with 14N49 engines. Serials 501-696.
3 preproduction Bloch 155's to be built using former Bloch 152 airframes, Nos. 16-194-262.

A Bloch 155 of 4th Escadrille, G.C.II/8. (Photo: C.A.C.)



Captured Bloch 155 used as a Luftwaffe *trainer; this photograph was taken at Orange in 1944.*

400 Bloch 155's with 14N49 engines. Serials 701-1100.

THE M. BLOCH 155

The Marcel Bloch 155 was designed under the direction of M. Fandeux as an improvement on the Bloch 152. Its essential difference was that it had increased fuselage fuel tanks, a cleaner engine cowling on which no outer fairing protruded around the cylinder heads, a slight increase in the wing chord, an armoured 40 mm. Triplex windshield and more powerful armament consisting of two belt-fed 20 mm. HS404 cannon and four 7·5 mm. MAC 1934-M39 machine guns. The modified fuel tank necessitated the re-designing of the whole of the fore part of the fuselage as the cockpit had to be moved further aft.

The prototype Bloch 155-01 was presumably assembled using the No. 449 airframe built at Châteauroux-Déols, from which airfield the first flight took place on 3rd December 1939 with SNCASO test pilot Bellecroix at the controls.

The first production machine, Bloch 155-701, made its maiden flight from Déols on 3rd April 1940.

By mid June, some 10 machines had come off the assembly line and were intended to enter service with G.C. I/1 at Agen; but the armistice of 25th June prevented this.

BLOCH ORDER OF BATTLE

By the 10th May 1940, 140 Bloch 151's and 363 Bloch 152's had been taken on charge by *l'Armee de l'Air*. 16 Bloch 151's had been given to *l'Aéronavale* and seven were *en route* to Greece. Although 37 Bloch 151's and a reserve of 10 still remained on the strength of a few units, these aircraft were to be returned to EAA 301 as soon as the units were fully re-equipped with Bloch 152's.

The existing 360 Bloch 152's consisted of 195 powered by the 14N25 engine and 165 fitted with the 14N49. Among the latter, only 80 of those delivered from 5th March onwards carried a serial over 501 and consequently were the only machines considered as fully operational by the Air Staff. Consequently, sub-standard Bloch 152's had to remain in front line service despite their inadequacies.

The Bloch 152-equipped units accounted for 93 aircraft immediately serviceable and 53 more machines held in reserve or temporarily unserviceable.

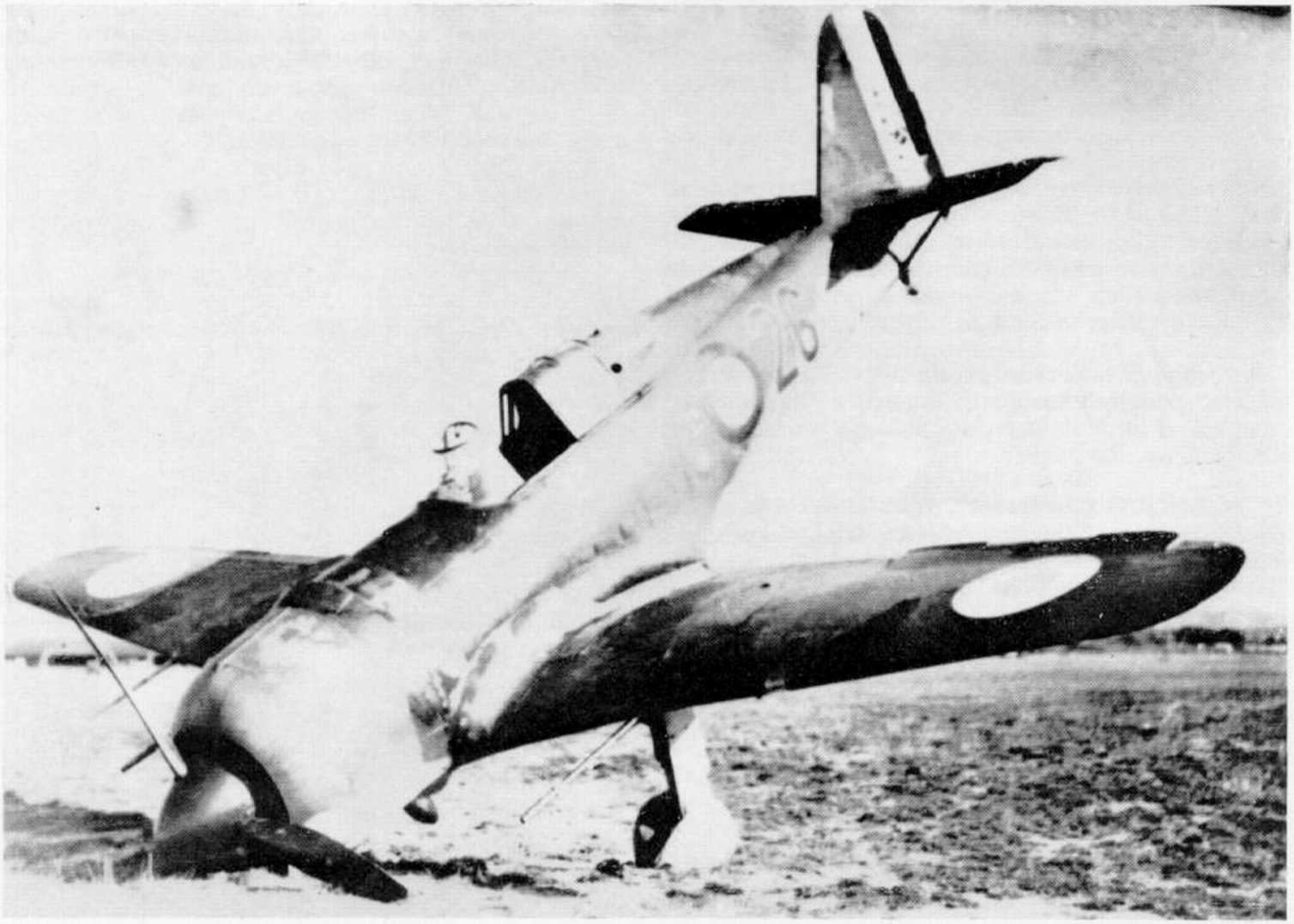
The location of these units was as follows:—

Zone d'Operations Aeriennes Nord (Northern Air Command):

GC. II/8 at Calais-Marck.

G.C. I/1 at Chantilly-les-Aigles and G.C. II/1 at Buc, both entrusted with the defence of the Paris area.

The Bloch 155-01; in this view the normal tail unit of the 152 is clearly visible. (Photo: M. Mutin)



A Bloch 152 and personnel of G.C.I/6; 1940. (Photo: C.A.C.)

G.C. II/10 at Rouen-Boos and G.C. III/10 at Le Havre-Octeville, both for the defence of the Lower Seine area.

The last four units were part of *Groupement de Chasse 21*).

Zone d'Operations Aeriennes Est (Eastern Air Command):

G.C. I/8 at Velaine-en-Haye attached to *Groupement de Chasse 22.*

Zone d'Operations Aeriennes des Alpes:

G.C. III/9 at Lyons-Bron for the defence of the Lyons-Saint-Etienne and Le Creusot area.

On the same base, the recently formed Polish G.C. I/145 began training with a few Bloch 151's, planned to be replaced by Bloch 152's. This did not materialise and by 12th May it was decided to arm the Polish unit with Caudron-Renault 714's.

At Hyeres, the *Aéronavale Escadrille* AC3 was also in training with Bloch 151's which had just replaced their Dewoitine 510's.

G.C. II/9 was formed on the 1st January 1940 at Oran-la-Senia (North Africa) and moved to Marignane early in May without its M.S. 406's and thus had no aircraft. Thirty Bloch 152's were collected from the Châteauroux SNCASO on 12th May. On 18th and 19th May, after a few days training, G.C. II/9 moved to Buc to reinforce G.C. II/1.

Very few encounters took place between Bloch 152's and the *Luftwaffe* before air operations entered into a more active phase. During the "phoney war" one kill only was logged; on 20th April *Aspirant* Amouroux of G.C. III/9 shot down a solitary Junkers 88 at Ozolle, which had already been damaged by anti-aircraft guns.

MAY-JUNE 1940

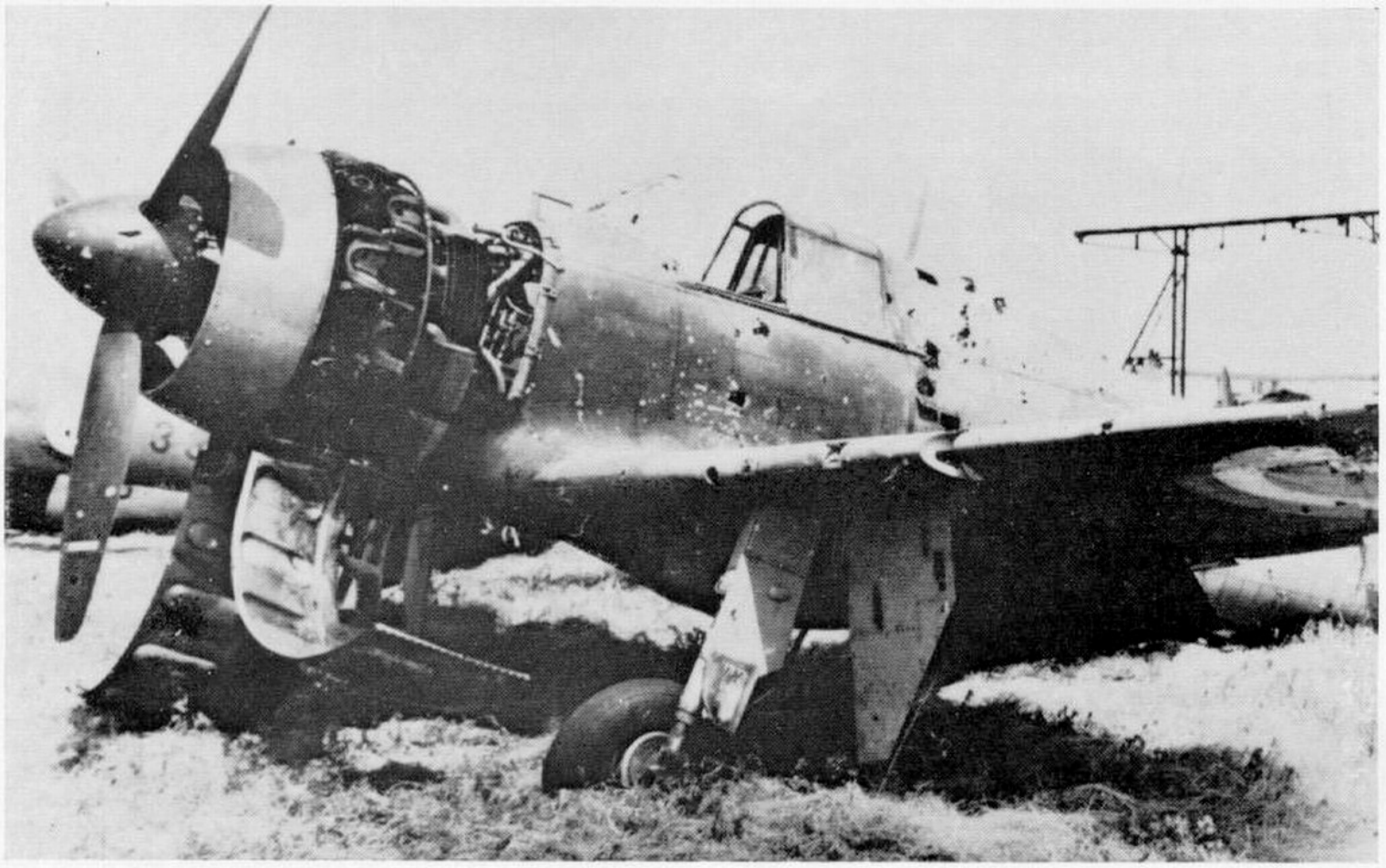
It is impossible to relate in this *Profile* the full story of the units that fought with Bloch 151 and 152 aircraft. The losses and damage in machines were very heavy during the first days of the *Blitzkrieg*. On the evening of 17th May the only Bloch 152's that could be despatched immediately by the five G.C.'s of ZOAN were 13 by G.C. I/1, ten by G.C. II/1, 14 by G.C. II/10, seven by G.C. III/10, and seven by G.C. I/8, this last unit having moved to Chantilly on 15th May and transferred from ZOAE to ZOAN.

At 7.0 p.m. on 14th May, 27 Bloch 152's from G.C. I/1, II/10 and III/10 were ordered to provide air cover for an armoured division counter-attacking in the Maubeuge-Charleroi area. The nine aircraft from G.C. III/10 formed the low patrol and shot down two Do 17's and four Bf 109's confirmed, plus one Bf 109 probable. One pilot was killed, four injured, six Bloch 152's destroyed and one damaged On 17th May, 15 machines from G.C. II/10 and six from G.C. III/10 patrolled the Trelon-Chimay area where 12 LeO 451's of *Groupement de Bombardement* No. 6 attacked enemy columns. Four bombers failed to return and seven Bloch 152's were written off with three pilots killed and one wounded. These were severe losses when set against one Bf 109 destroyed, one Bf 110 destroyed and one Bf 110 probable.

Early in the afternoon of the 3rd June, almost all of the French Air Force bases round Paris were attacked by approximately 300 bombers of *Luftflotten* 2 and 3 (Operation "Tapir") and were covered by numerous Bf 109's and 110's. Among the units entrusted with the defence of the Paris area were three and a half Bloch 152 units: G.C. I/1 at Chantilly, reinforced by nine aircraft of G.C. II/1 at Brétigny-sur-Orge and G.C. I/8 at Claye-Souilly. The order to scramble being too late, the fighters were involved in fighting while they were still climbing. Nine Bloch's were destroyed and three damaged with six pilots killed and three injured. Four enemy aircraft (two Bf 109's, one He 111 and one Do 17) were brought down and four damaged.

Besides the three further Bloch 151's which were delivered to *l'Aéronavale*, between 10th and 31st May, 108 Bloch 152's were allocated to *Armée de l'Air* operational units. In the first six days of June they were followed by 84 Bloch 152's. By 11th June there were only 25 serviceable machines left in all the EAA 301 establishments. These were insufficient to compensate the machines being lost as most of these were used to re-equip G.C. II/9 and II/6.

Several additional units came into existence during the campaign with Bloch 151's or 152's. By the end of May, autonomous fighter patrols, most of their pilots Polish, included six Bloch 152's at Château-



A four-gun Bloch 152 destroyed on the ground at Signy le Petit. (Photo: Archiv K. Ries)

roux, six 151's at Angers, three Bloch 151's at Avord, five Bloch 152's at Bordeaux and nine Bloch 151's at Tours. Another similar unit at Bourges was headed by *Commandant* Haegelen, a former fighter pilot of the First World War with 22 victories, who claimed his 23rd victim on 26th June by bringing down one of the six He 111's that tried to bomb the factory. *Groupe de Chasse de Défense* G.C.D. I/55, formed at Etampes with some Bloch 152's recorded at least two victories.

Together with the Potez 63.11-equipped *Groupe de Reconnaissance* G.R. I/14, one Bloch 152 unit, G.C. II/8, was stationed in Great Britain. Thirteen Bloch 152's landed at Lympne on 30th May and together with British Hurricanes, were engaged on escorting Potez 63.11 or *Aéronavale* dive-bombers in the Dunkirk area. They returned to Deauville on 4th June.

After training at Lyons-Bron, 31 Polish pilots were sent as reinforcements to various Bloch 152 units. On the 13th June it was decided to replace the very disappointing Caudron-Renault 714's with which the Polish G.C. I/145 was equipped, with Bloch 152's. For this purpose, half of G.C. I/145 (12 pilots) moved to Vignot near Châteauroux and 16 other pilots were transferred to G.C. I/8 and I/1. Four days later all Polish airmen were withdrawn from *l'Armée de l'Air* and embarked on 19th June for Great Britain. The *Aéronavale Escadrilles* AC1 and AC2 urgently needed reforming, having moved back to Cherbourg after three weeks fighting in which they lost eight of their Potez 631's. Six Bloch 151's were allocated to AC2 and AC1 collected all the remaining Potez 631's while awaiting its conversion to Dewoitine 520's. Forming a patrol stationed at Mauper-tus-sur-Mer under *Lieutenant* de Vaisseau de Lévis-Mirepoix, the depleted AC2 lost one Bloch 151 which failed to return from reconnaissance.

On 15th June at Hyeres, AC3 *Aéronavale Escadrille's* Bloch 151's were in the same fight against Italian machines in which *Adjutant* Le Gloan of G.C. III/6 distinguished himself (*Profile* 135, p.7). Two Bloch 151's were shot down and three more damaged. One single Fiat C.R. 42 was rammed deliberately by a naval pilot, and did not reach the frontier.

The following table approximately sums up the activity of the Bloch 152 units in this campaign:—

Group de Chasse	*Victories*		*Pilots lost (combat and accident)*		
	Confirmed	*Probable*	*Killed*	*Injured*	*Prisoners*
G.C. I/1	23	7	6	5	—
G.C. II/1	25	4	7	8	—
G.C. II/6	8	3	1	4	1
G.C. I/8	36	4	8	6	—
G.C. II/8	10	2	3	5	1
G.C. II/9	14	5	9	5	1
G.C. III/9	2	2	2	3	—
G.C. II/10	15	4	8	2	—
G.C. III/10	13	3	3	7	—
	146	34	47	45	3

It is interesting to note that among the 200 or so French pilots who recorded four or more victories during this campaign, only 14 Bloch 152 pilots appear on the list. The most successful of them were *Sous-Lieutenant* Thollon of G.C. I/8 with eight kills (7+1), *Sergent* Teillet of G.C. I/1 (7+1) and *Capitaine* Coutaud of G.C. I/1 (6+2).

AFTER THE ARMISTICE

When the French campaign came to an end, the nine *Groupes* equipped with Bloch 152's had retreated southwards to escape captivity thus:

G.C. I/1 at Agen, G.C. II/1 at Valensole (19 Bloch

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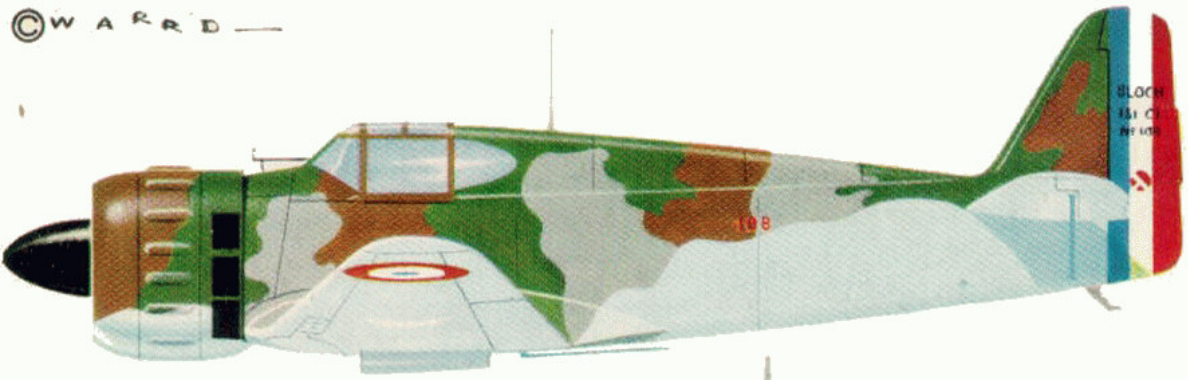
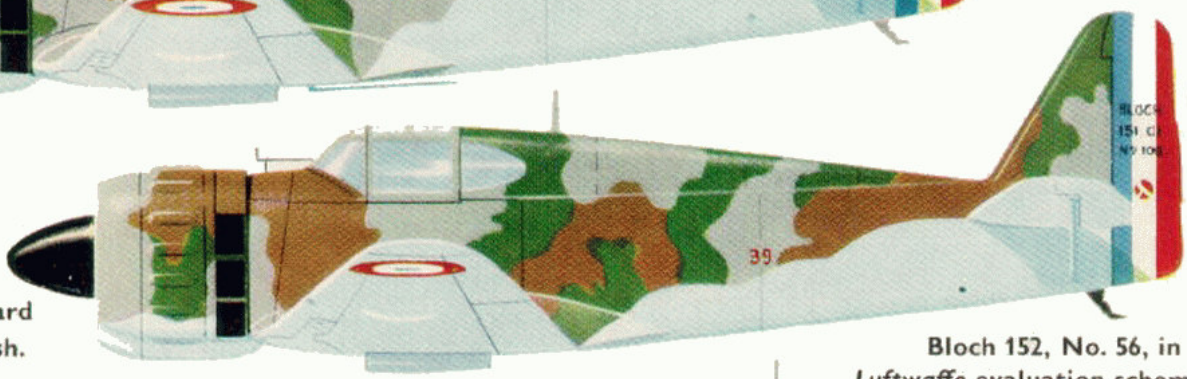


Bloch 151 C1, No. 108, flown by Sergent-Chef C. Mazo of G.C.III/10; Le Havre-Octeville, January 1940.

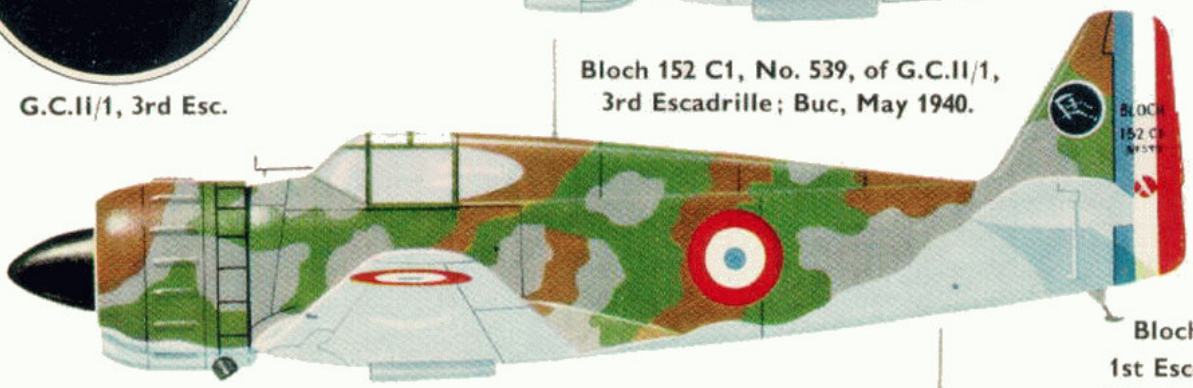


Bloch 151 C1, No. 39, in standard ex-factory finish.

Bloch 152, No. 56, in *Luftwaffe* evaluation scheme.

G.C.II/1, 3rd Esc.

Bloch 152 C1, No. 539, of G.C.II/1, 3rd Escadrille; Buc, May 1940.



Bloch 152 C1 of G.C.I/8, 1st Escadrille; *Armée de l'Air de l'Armistice*, 1942.

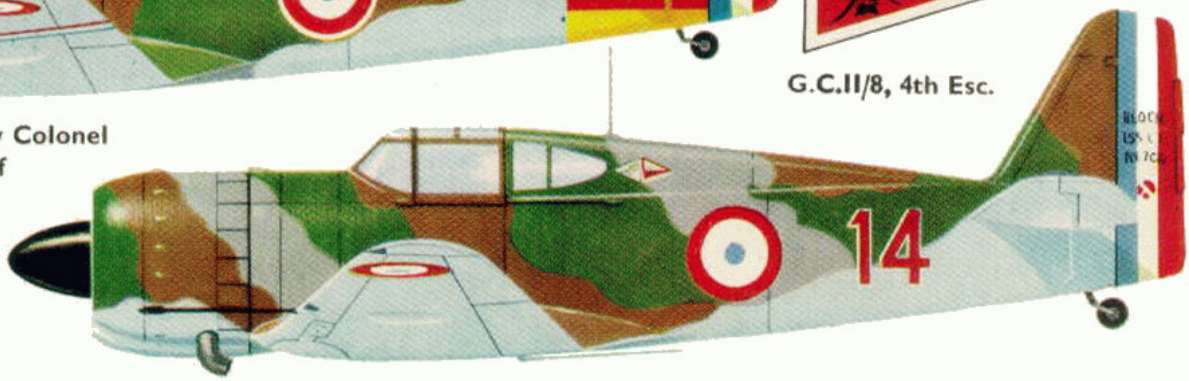
G.C.I/8, 1st Esc.

Bloch 155 C1, probably No. 707, of G.C.I/8, 1st Escadrille; *Armée de l'Air de l'Armistice*, Montpellier, 1942.

G.C.II/8, 3rd Esc.

G.C.II/8, 4th Esc.

Bloch 155 C1, No. 708, flown by Colonel Robert, commanding officer of G.C.II/8; Calais-Marck, May 1940. Note insignia of both Escadrilles of G.C.II/8 behind cockpit.



152's), G.C. II/6 at Avignon-Pugant (14 Bloch 152's and ten Dewoitine 520's), G.C.'s I/8, II/9 and III/10 at Toulouse-Francazal, G.C. II/8 at Aix-les-Milles (four Bloch 155 No. 705 to 708, mixed with Bloch 152's), G.C. III/9 at Le Luc, G.C. II/10 at Toulouse-Blagnac (with amongst its machines one Bloch 155 flown by *Commandant* Ronzet).

Except for four Bloch 151's that retreated to Bone via Corsica with *Escadrille* AC2, no Bloch crossed the Mediterranean, because its range was too short. By January 29th 1941 five Bloch 151's and 152's were in Great Britain but it is unlikely that these were used by the Free French Air Force.

Out of the 632 machines taken on charge by the French Air Force, including a few shortly after the armistice (140 Bloch 151's, 482 Bloch 152's, one Bloch 153 and nine Bloch 155's), by the end of July 1940 only 320 remained. These consisted of 51 Bloch 151's, 259 Bloch 152's, one Bloch 153 and nine Bloch 155's. Nearly 270 Bloch fighters had been lost in combat or abandoned to the enemy in six weeks.

G.C.'s II/6, II/10 and III/10 were disbanded in August, 1940, as was *Escadrille* AC3. The new *Armée de l'Air de l'Armistice*, wrongly but better known as the Vichy Air Force, was permitted to retain in unoccupied territory, six G.C.'s each with 24 Bloch 152's (or 155's) in the first line.

Air defence of the non-occupied zone was to rest with the *Secteur de Défense Aérienne Sud* which was constituted on 13th August, 1940, as follows:

Sous-Secteur Sud-Est: *Groupement de Chasse No. 22* to which were attached G.C. I/1 at Le Luc, II/8 at Marignane and III/9 at Salon-de-Provence.

Sous-Secteur Sud-Ouest: *Groupement de Chasse No. 23* with G.C. I/8 at Montpelier-Fréjorgues and E.C.N. I/13 and 3/13 at Nîmes-Garons.

G.C. I/1 at Lyons-Bron and II/9 at Aulnat were held in reserve as *Groupes de Chasse de Défense* on the level of the reconstituted *Regions Aériennes*.

Redesignated 2AC after moving to Tunis-Sidi-Ahmed, the former *Aéronavale Escadrille* AC2 was re-equipped in September 1940, at Oran-la-Senia with Dewoitine 520's.

The Châteauroux factory, initially occupied by the Germans, was shortly afterwards included within the unoccupied zone. The production of the Bloch 155 had been stopped on 18th June after the first eight machines (Nos. 701-708) had been flown south by ferry pilots and two subsequent airframes (709 and 710) had been destroyed on the ground by German air attack. In accordance with German orders, 19 airframes which were well advanced in the assembly shops (Nos. 711-729) were completed and delivered to the Armistice Air Force; they were later stored or put into service with the 1st *Escadrille* of G.C. I/8, except for No. 708 of the first series which remained the personal aircraft of the C.O. of G.C. II/8.

By April 1941 the German Armistice Commission had agreed a proposal that all single-engined fighter units were to be standardised on one type, the Dewoitine 520.

(It is interesting to record that some 95 Bloch 152's were secretly modified in the winter of 1941/42 to give them the range to cross the Mediterranean to freedom. A rear-fuselage fuel tank of 70 litres capacity was fitted.)

The first unit to relinquish its Bloch's for Dewoitines was G.C. I/1, between 29th May and 6th June 1942. In mid-June G.C. III/9 followed suit, and at the end of the month G.C. II/1 also handed over its equipment. When the *Armee de l'Air de l'Armistice* was finally disbanded on 27th November 1942, there were on charge six Bloch 151's (20 machines had also been modified to 152 standard), and 215 152's and 155's. Of these last, 27 were with G.C. I/8, 26 with G.C. II/8, and 25 with G.C. II/9. About ten Bloch 155's were on the strength of the 1st *Escadrille* of G.C. I/8 and ten further 155's (Nos. 701, 712 to 716, 724 and 727 to 729) were with storage units. One hundred and seventy-three Bloch fighters, of which 83 were immediately serviceable, were reportedly seized by the *Luftwaffe*. No information is available on their possible use by Axis air force units.

THE GREEK BLOCHS

Of the 25 Bloch 151's ordered late in 1939 by the Royal Hellenic Air Force, only nine had been delivered between late April 1940 and the date of the armistice. The nine Blochs went into service with the R.H.A.F.'s No. 24 Squadron (see *Profile* No. 170) at Thriassion Eleusinos airfield, commanded by one Anagnostopoulos. The unit was still working up at the time of the Italian assault on Greece on 28th October 1940. Unfortunately, nothing is known of their operations up to 27th April 1941, when resistance in the air ceased.

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SPECIFICATION

	M. Bloch 151	M. Bloch 152		M. Bloch 155
Powerplant:				
Gnôme-Rhône type	14N35	14N25	14N49	
Power at sea level (h.p.)	815	870	920	
Max. power at take-off (h.p.)	895	1100	—	
Power at rated altitude (h.p.)	920	1000	1060	
Airscrew type	G.R. type	G.R. type 2590	Chauvière type 371	
Airscrew diameter (m.)	3·05	3·07	3·06	
Fuel capacity (litre)	427	427	427	—
Weights:				
Empty (kg.)	2,097	2,103	2,158	—
Normal loaded (kg.)	2,522	2,693	2,748	2,850
Performance:				
Max. speed at altitude (km/h.)	460	482	509	520
Climb time to 4,000 m.	7 min.	6 min. 08 sec.	6 min. 12 sec.	—
Climb time to 8,000 m.	17 min. 40 sec.	14 min. 18 sec.	16 min.	—
Range at 5,500 m. height (km.)	640	580	540	
Armament:				
HS 404 20 mm. cannon	nil	2 with 60 r.p.g.		2
MAC 1934-M39 7·5 mm. m.g.	4 with 300 r.p.g.	2 with 500 r.p.g.		4 with 500 r.p.g.

Dimensions: Wing span 10·542 m. Overall length 9·104 m. Height, tail skid on ground 3·030 m. Gross wing area 17·32 m². Wing incidence +3°40′ Undercarriage track 3·050 m.

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